Experimental WFO Eureka Humboldt Bay Bar Graphical Forecast

Part I – Mission Connection

a.   Product Description - A graphical display of wave height, period, direction and areas of extreme wave steepness or breaking potential in and near the entrance to Humboldt Bay, CA.

b.   Purpose - Humboldt Bay is the only deep-water port between the San Francisco Bay in central California and Coos Bay in central Oregon. The entrance to the bay, or bar, can be a treacherous area with varying depth and ocean swells and strong current flows. Boats have capsized, and occasionally lives lost, when transiting through the bar, especially when a wave becomes unexpectedly very steep or it breaks. This product will allow mariners to plan when and where they can safely transit the bar.

c.   Audience - The product is for any marine customer who is transiting through the Humboldt Bay bar.

d.   Presentation Format - This product will be a graphical model display of significant wave height, period and direction and identified areas of very steep or breaking waves. One-hour forecasts will be available through 85 hours. It will be an htm file with looping capabilities and available on the WFO Eureka, CA internet page at http://www.wrh.noaa.gov/eka/.

e.   Feedback Method. - Feedback on the accuracy of the product will be conducted through meetings with the United States Coast Guard and members of the local Marine Advisory Group. Feedback on the accuracy, usability and display of the product will be through an e-mail address on the Web page containing the product to Troy.Nicolini@noaa.gov, via phone at 707-443-6484 x-223 or via mail to:

Troy Nicolini
National Weather Service
300 Startare Drive
Eureka, CA 95501-6000.

Experimental Feedback Period: August 1, 2005 through July 30, 2006

f.   Examples can be found at: http://www.wrh.noaa.gov/eka/swan/

g.   PDD Approved by Vickie Nadolski WR Regional Director

Part II – Technical Description

a.   Format and Science - The product is generated by nesting the near shore SWAN model inside the deep water Wave Watch III model and then adding parameterized tidal current, based on a tidal model developed for Humboldt Bay using ADCIRC, a two-dimensional,

depth integrated finite element circulation model. SWAN (Simulating Waves Nearshore) is a third-generation stand-alone (phase-averaged) wave model for the simulation of waves in coastal areas, lakes and estuaries from given wind-, bottom- and current conditions. The initial wind input into the SWAN model is the 06z run of the 12km NAM, with anticipation that the future wind input will be from the NDFD grids. The NAM (North American Mesoscale) model is a regional mesoscale model using enhanced terrain and improved parameterization of surface and precipitation processes. The output is generated once per day at WFO Eureka, CA with an anticipated increase in frequency. Funding for this developmental project came from a COMET grant and the Coastal Storms Project, managed by the Office of Science and Technology. More information can be found at: http://ams.confex.com/ams/Annual2005/techprogram/paper_85402.htm.

b.   Availability - Initially this product will be available once per day at approximately 1930 UTC with an anticipated increase in frequency up to four times per day